Schedule
Thursday April 17 – Cole Hall

8:00-8:30 Breakfast

Session I - Hematopoiesis and The Hematopoietic Niche
Chair: Tippi MacKenzie

8:30-8:40 Introduction
8:40-9:40 Alan Flake: In utero transplantation – Lessons learned in 30 years
   *Children's Hospital of Philadelphia*

9:40-10:00 Graca Almeida-Porada: Ontogeny of the human hematopoietic niche
   *Wake Forest University*

10:00-10:20 William Peranteau: Ex vivo modification of donor hematopoietic cells to
   enhance allogeneic engraftment following *in utero* hematopoietic cell
   transplantation
   *Children's Hospital of Philadelphia*

10:20-10:30 Break

10:30-11:30 Irv Weissman: Normal and neoplastic stem cells
   *Stanford University*

11:45-1:00 Lunch/Display Posters

Session II - Hematopoietic Diseases
Chair: Robert Montgomery

1:15-1:35 Jennifer Puck: Newborn Screening for SCID and T Cell Lymphopenic Disorders
   *University of California, San Francisco*

1:35-1:55 Elliott Vichinsky: Alpha thalassemia major: new mutations, intrauterine
   management, and outcomes
   *Children's Hospital of Oakland Research Institute*

1:55-2:15 Jerry Chan: Combined intrauterine and postnatal cell therapy using fetal liver
   and adult bone marrow cells facilitates sustained donor cell chimerism in a
   murine thalassemia model
   *Duke – National University of Singapore*

2:15-2:35 David Archer: Alterations in specific immune cell subsets in children with
   sickle cell disease
   *Emory University*

2:35-3:00 Coffee Break

Session III – Amniotic Fluid and Mesenchymal Stem Cell Transplantation
Chair: Anna David
3:00-3:20  **Cecilia Gotherstrom:** Ten year follow up after prenatal transplantation of fetal mesenchymal stem cells in a patient with severe osteogenesis imperfecta  
*Karolinska Institutet*

3:20-3:40  **Pascale V Guillot:** A fetal-to-fetal approach for the treatment of brittle bone disease  
*University College London*

3:40-4:00  **Panicos Shangaris:** Haematopoietic engraftment of amniotic fluid stem cells following in utero transplantation  
*University College London*

4:00-4:20  **Steven Shaw:**  
potential both in vitro and in vivo and engraft after autologous in utero stem cell transplantation  
*University College London*

4:20-4:40  **George Christ:** Muscle progenitor cells for tissue engineered muscle repair (TEMR) of volumetric muscle loss (VML) injuries: cleft lip as “first-in-man” target indication  
*Wake Forest University*

4:40-5:00  **Aijun Wang:** Engineering biomaterials and stem cells for *in utero* repair of structural birth defects  
*University of California, Davis*

5:00-5:20  **Anna David:** Translating a prenatal gene therapy into the clinic: experience with maternal uterine artery VEGF gene therapy for fetal growth restriction.  
*University College London*

5:20-6:00  **Group Discussion (Part I)**

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**Friday April 18 – Cole Hall**

8:00-8:30  **Breakfast**

**Session I - Transplantation Immunology**  
**Chair:** Graca Almeida-Porada

8:30-9:30  **Maria Grazia Roncarolo:** Induction of tolerance to allogenic stem cells  
*San Raffaele Telethon Institute for Gene Therapy*

9:30-9:50  **Qizhi Tang:** Immune tolerance by design  
*University of California, San Francisco*

9:50-10:10  **Tippi MacKenzie:** Mechanisms of tolerance induction after in utero hematopoietic cell transplantation  
*University of California, San Francisco*

10:10-10:30  **Break**
# Session II - Maternal/Fetal/Neonatal Tolerance
**Chair: Nick Fisk**

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
<th>Institution</th>
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<tbody>
<tr>
<td>10:30-10:50</td>
<td><strong>Aimen Shaaban</strong></td>
<td>Prenatal NK cell education as the final endorsement of allospecific tolerance</td>
<td>Cincinnati Children’s Hospital</td>
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<td>10:50-11:10</td>
<td><strong>Trevor Burt</strong></td>
<td>Using fetal and adult gene expression signatures to predict immunity in the newborn</td>
<td>University of California, San Francisco</td>
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<td>11:10-11:30</td>
<td><strong>Becky Adkins</strong></td>
<td>Dynamic epigenetic events in murine fetal and neonatal T cell ontogeny</td>
<td>University of Miami</td>
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<tr>
<td>11:30-11:50</td>
<td><strong>Magnus Westgren</strong></td>
<td>Differentiation and functional regulation of human fetal NK cells</td>
<td>Karolinska Institutet</td>
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<td>12:00-1:15</td>
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<td><strong>Lunch/Posters</strong></td>
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<td>1:30-1:50</td>
<td><strong>Chris Baker</strong></td>
<td>Analysis of maternal microchimerism in rhesus monkeys (Macaca mulatta) using real-time quantitative PCR amplification of MHC polymorphisms</td>
<td>University of California, San Francisco</td>
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<td>1:50-2:10</td>
<td><strong>Anna Bakardjiev</strong></td>
<td>Host defense mechanisms at the maternal-fetal interface</td>
<td>University of California, San Francisco</td>
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<td>2:10-2:30</td>
<td><strong>Susan Fisher</strong></td>
<td>Maternal decidual macrophages inhibit NK cell killing of invasive cytотrophoblasts during human pregnancy</td>
<td>University of California, San Francisco</td>
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<td>2:30-2:50</td>
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<td><strong>Coffee Break</strong></td>
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# Session III - Gene Therapy
**Chair: Suzy Buckley**  
**Session will be held in HSW 300**

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<tbody>
<tr>
<td>2:50-3:10</td>
<td><strong>Mort Cowan</strong></td>
<td>Gene therapy for artemis-deficient severe combined immunodeficiency</td>
<td>University of California, San Francisco</td>
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<td>3:10-3:30</td>
<td><strong>Simon Waddington</strong></td>
<td>Fetal gene and stem cell therapy – a skeptic’s perspective</td>
<td>University College London</td>
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<td>3:30-3:50</td>
<td><strong>Ahad Rahim</strong></td>
<td>Perinatal gene therapy rescues acute neonatal lethal neuronopathic Gaucher disease in mice</td>
<td>University College London</td>
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3:50-4:10  
**Citra Mattar**: Fetal gene transfer in early gestation promotes stable expression with minimal immune toxicity and facilitates improved expression after postnatal challenge  
*National University of Singapore*

4:10-4:30  
**Alice Tarantal**: Translational nonhuman primate models for regenerative medicine and gene therapy: focus on the fetus and infant  
*University of California, Davis*

5:00-6:00  
Group Discussion (Part II)  
Reception - Stem Cell Board Room

6:00-7:30  
Reception – Stem Cell Board Room
Development and Functional Competence of Fetal Dendritic Cells and Macrophages in Human Early-Mid Gestation
Chan JKY1,2, Shin A3, Low D1, Wasan PS3, Poidinger M3, Larbi A3, Collin M4, Choolani M2, Haniffa M3,4 and Ginhoux F3
1Reproductive Medicine, KK Women’s and Children’s Hospital, Singapore 2Yong Loo Lin School of Medicine, National University of Singapore, Singapore 3Singapore Immunology Network, Agency for Science, Technology and Research (A*STAR), Singapore 4Institute of Cellular Medicine, Newcastle University, UK

In Utero Depletion of Fetal Host Hematopoietic Stem Cells Improves Engraftment Following Neonatal Transplantation in Mice
Derderian SC1,2, Togarra4 PP1,2, King C1,2, Moradi PW1,2, Czechowicz A3, Reynaud D1, Weissman I4, MacKenzie TC1,2.
1Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research, 2Department of Surgery, UCSF, San Francisco, CA, USA 3The Department of Pediatrics, Boston Children’s Hospital, Harvard Medical School, Boston, MA, USA. 4Stem Cell Biology and Regenerative Medicine, Departments of Pathology and Developmental Biology, Stanford University School of Medicine, Palo Alto, CA

Maternal and Fetal T Cell Responses During Normal Pregnancy and Preterm Labor
Frascoli M1,2, Coniglio L1,2, Tang Q2, Gomez-Lopez N3, Romero R3, and MacKenzie TC1,2.
1Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research, 2Department of Surgery, UCSF, San Francisco, CA, USA, and 3Perinatology Research Branch, NICHD/NIH/DHHS and Hutzel Women’s Hospital, Detroit, MI, USA.

Optimization of Vascular Niches to Increase Hematopoietic Engraftment
Mokhatari S, Colletti E, Porada C, Almeida-Porada G
Wake Forest Institute for Regenerative Medicine, NC, USA

Human Stem Cells from Early Chorion Differentiate into Podocytes and Improve Renal Glomerulopathy in Alport Mice
Moschidou D1,3, Patsia M3, Bou-Gharios G1, Pusey CD1, Fisk NM2, Cook HT1, David A3, De Coppi P3 and Guillot PV1,3
1Imperial College London, London, UK.2University of Queensland, Brisbane, Australia. 3University College London, London, UK.

Cell Fusion Phenomena Detected after in Utero Transplantation of Ds-red-Harbouring Porcine Amniotic Fluid Stem Cells into EGFP Transgenic Mice
Peng SY1, Chen YS1,2, Wang YH3, Lee HM1,2, Cheng WT5,6, Wu SC6, Shaw S6,7
1Institute of Biotechnology, National Taiwan University, Taiwan 2Department of Surgery, Hualien Armed Forces General Hospital, Taiwan 3Department of Nursing, College of Health Sciences, Yuanpei University, Taiwan 4Department of Animal Science and Technology, National Taiwan
Innate immune response to *Listeria monocytogenes* infection at the maternal-fetal interface

Rizzuto G, Bakardjiev A

1 Departments and Pathology and Pediatrics, Microbial Pathogenesis & Host Defense Program
University of California, San Francisco

Second and Third Trimester Human Amniotic Fluid Stem Cells Engraft After in Utero Transplantation in Immunocompetent Mice

Shaw SWS 1,2, Shangaris P 1,2, Pozzobon M, Piccoli M, Pipino C, Lee KH, Schiavo A, Maghsoudlou P, Lin J, De Coppi P and David A

1 Institute for Women’s Health, University College London, London, London, United Kingdom;
2 Institute of Child Health, University College London, London, London, United Kingdom; and
3 Research Institute, Citta’ della Speranza, Padua, Italy.

Uterine integrity is required to maintain human fetal immunologic naiveté

Snead A, Nguyen T, Yesayan M, Kahn DA

Department of Obstetrics & Gynecology, UCLA, Los Angeles, CA, USA

Tregs Prevent Production of Maternal Antibodies to Fetal Alloantigens

Marta Wegorzewska1,2,*, Catherine Tsai1,2,*, Patriss Moradi1,2, Philip Norris3, Rachel Jackman3, Qizhi Tang2, and Tippi C. MacKenzie1,2

1 Eli and Edythe Broad Center of Regeneration Medicine, 2 The Department of Surgery, University of California, San Francisco and 3 Blood Systems Research Institute, San Francisco, CA, USA